401 KAR 61:050. Existing storage vessels for petroleum liquids.

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
Department for Natural Resources
Division of Air Pollution

Relates to: KRS Chapter 224.20-100, 224.20-110, 224.20-120
Pursuant to: KRS 13.082, 224.10-100
Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of emissions from existing storage vessels for petroleum liquids.

Section 1. Definitions.
As used in this regulation, all terms not defined in this section shall have the meaning given them in 401 KAR 50:010.

(1) "Affected facility" means a storage vessel for petroleum liquids which has a storage capacity of greater than 2,195 1 (580 gallons).

(2) "Storage vessel" means any tank, reservoir, or container used for the storage of petroleum liquids, but does not include:
(a) Pressure vessels are designed to operate in excess of fifteen (15) pounds per square inch gauge without emissions to the atmosphere except under emergency conditions;

(b) Subsurface caverns or porous rock reservoirs; or

(c) Underground tanks if the total volume of petroleum liquids added to and taken from a tank annually does not exceed twice the volume of the tank.

(3) "Petroleum liquids" means crude petroleum, condensate, and any finished or intermediate products manufactured in a petroleum refinery but does not mean Number 2 through Number 6 fuel oils, gas turbine fuel oil Number 2-GT through 4-GT, or diesel fuel oils Numbers 2-D and 4-D as specified by the department.

(4) "Petroleum refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives.

(5) "Crude petroleum" means a naturally occurring mixture which consists of hydrocarbons or sulfur, nitrogen or oxygen derivatives of hydrocarbons and which is at standard conditions.

(6) "Hydrocarbon" means any organic compound consisting predominantly of carbon and hydrogen.

(7) "Condensate" means hydrocarbon liquid separated from natural gas which condenses due to changes in the temperature or pressure and remains liquid at standard conditions.

(8) "True vapor pressure" means the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods specified by the department.

(9) "Floating roof" means a storage vessel cover consisting of a double deck, pontoon single deck, internal floating cover or covered floating roof, which rests upon and is supported by the petroleum liquid being

contained and is equipped with a closure seal or seals to close the space between the roof edge and tank wall.

(10) "Vapor recovery system" means a vapor gathering system capable of collecting all hydrocarbon vapors and gases discharged from the storage vessel and a vapor disposal system capable of processing these hydrocarbon vapors and gases so as to prevent their emission to the atmosphere.

(11) "Reid vapor pressure" is the absolute vapor pressure of volatile crude oil and volatile petroleum liquids, except liquefied petroleum gases, as determined by methods specified by the department.

(12) "Submerged fill pipe" means any fill pipe the discharge of which is entirely submerged when the liquid level is six (6) inches above the bottom of the tank; or when applied a tank which is loaded from the side, shall mean every fill pipe the discharge opening of which is entirely submerged when the liquid level is two (2) times the fill pipe diameter above the bottom of the tank.

(13) "Classification date" means April 9, 1972.

(14) "Custody transfer" means the transfer of produced crude oil and/or condensate, after processing and/or treating in the producing operations, from storage tanks or automatic transfer facilities to pipelines or any other forms of transportation.

(15) "External floating deck" means a storage vessel cover in an open tank top consisting of a double deck or pontoon single deck which rests upon and is supported by the petroleum liquid being contained and is equipped with closure seals to close the space between the roof edge and tank shell.

(16) "Internal floating roof" means a cover or roof in a fixed roof tank which rests upon or is floated upon the petroleum liquid being contained, and is equipped with closure seals to close the space between the roof edge and tank shell.

(17) "Liquid-mounted" means a primary seal mounted so that the bottom of the seal covers the liquid surface between the tank shell and the floating roof.

(18) "Vapor-mounted" means a primary seal mounted so that there is an annular vapor space underneath the seal. The annular vapor space is bounded by the bottom of the vapor seal, the tank shell, the liquid surface, and the floating roof.

Section 2. Applicability

(1) This regulation shall apply to each affected facility commenced before the classification date defined in Section 1 of this regulation which is located in a county or portion of a county which is designated ozone nonattainment, for any nonattainment classification except marginal, under 401 KAR 51:010.

(2) This regulation shall not apply to storage vessels located on a farm and used exclusively for storing petroleum liquids used by the farm.

Section 3. Standard for VOCs.

The owner or operator of any storage vessel to which this regulation applies shall store petroleum liquids as follows:

(1) If the storage vessel has a storage capacity greater than 151,400 1 (40,000 gallons) and if the true vapor pressure of the petroleum liquid,

as stored, is equal to or greater than seventy- eight (78) mm Hg (1.5 psia) but not greater than 574 mm Hg (11.1 psia) the storage vessel shall be equipped with a floating roof, a vapor recovery system, or their equivalents.

(2) If the storage vessel has a storage capacity greater than 151,400 (40,000 gallons) and if the true vapor pressure of the petroleum liquid as stored is greater than 574 mm Hg (11.1 psia), the storage vessel shall be equipped with a vapor recovery system or its equivalent.

(3) If the storage vessel has a storage capacity greater than 2,195 1 (580 gallons), and if the true vapor pressure of the petroleum liquid, as stored, is equal to or greater than 10.3 kilopascal (1.5 psia), as a minimum it shall be equipped with a vapor recovery system or its equivalent.

(4) If the storage vessel is an external floating roof tank with a storage capacity greater than 151,400 1 (40,000 gallons), it shall be retrofitted with a continuous secondary seal extending from the floating roof to the tank wall (a rim-mounted secondary) if:

(a) The tank is welded tank, the true vapor pressure of the contained liquid is 27.6 kilopascal (4.0 psia) or greater, and the primary seal is one (1) of the following:

1. A metallic-type shoe seal, a liquid-mounted foal seal, or a liquid-mounted liquid-filled type seal; or

2. Any other closure device which can be demonstrated equivalent to the above primary seals.

(b) The tank is a riveted tank and the true vapor pressure of the contained liquid is 10.3 kilopascal (1.5 psia) or greater.

(c) The tank is a welded tank, the true vapor pressure of the contained liquid is 10.3 kilopascal (1.5 psia) or greater and the primary seal is vapor-mounted. If this primary seal closure device can be demonstrated equivalent to the primary seals described in paragraph (a) of this subsection, then the secondary seal is required if the vapor pressure is 27.6 kilopascal (4.0 psia) or greater.

Section 4. Operating Requirements.

(1) There shall be no visible holes, tears, or other openings in the seal or any seal fabric.

(2) All openings except stub drains, shall be equipped with covers, lids, or seals so that:

(a) The cover, lid, or seal is in the closed position at all times except during actual use;

(b) Automatic bleeder vents are closed at all times, unless the roof is floated off or landed on the roof leg supports; and

(c) Rim vents, if provided, are set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.

(3) External floating roof tanks subject to this regulation shall meet the additional requirements:

(a) The seals shall be intact and uniformly in place around the circumference of the floating roof between the floating roof and the tank wall.

(b) The gap area of gaps exceeding 0.32 cm (one-eight (1/8 in) in width between the secondary seal installed pursuant to Section 3(4) and the tank wall shall not exceed 6.5 sq. cm./0.3 of tank diameter (1.0 sq. in/ft).

(c) All openings in the external floating roof, except for automatic bleeder vents, rim space vents, and leg sleeves, shall provide a projection below the liquid surface.

(d) Any emergency roof drain shall be provided with a slotted membrane fabric cover or equivalent that covers at least ninety (90) percent of the area of the opening.

Section 5. Monitoring of Operations.

(1) If a liquid having a true vapor pressure greater than 7.0 kPa (1.0 psia) is stored in an external floating roof tank with a capacity of greater than 151,400 1 (40,000 gallons) not equipped with a secondary seal or approved alternative control technology, the owner or operator shall maintain a record of the average monthly storage temperature, the type of liquid, and the Reid vapor pressure of the liquid. The owner or operator shall retain the record for two (2) years after the date on which the record was made.

(2) The true vapor pressure shall be determined by using the average monthly storage temperature and typical Reid vapor pressure of the contained liquid or from typical available data on the contained liquid. Supporting analytical data shall be requested by the department if there is a question on the values reported.

Section 6. Compliance Timetable.

(1) The owner or operator of an affected facility that becomes subject to this regulation on or after the effective date of this regulation shall be required to complete the following:

(a) A final control plan for achieving compliance with this regulation shall be submitted no later than three (3) months after the date the affected facilit becomes subject to this regulation.

(b) The control device contract shall be awarded no later than five (5) months after the date the affected facility becomes subject to this regulation.

(c) On-site construction or installation of emissions control equipment shall be initiated no later than seven (7) months after the date the affected facility becomes subject to this regulation.

(d) On-site construction or installation of emission control equipment shall be completed no later than eleven (11) months after the date the affected facility becomes subject to this regulation.

(e) Final compliance shall be achieved no later than twelve (12) months after the date the affected facility becomes subject to this regulation.

(f) If an affected facility becomes subject to this regulation because it is located in a county previously designated nonurban nonattainment or redesignated in 401 KAR 51:010 after November 15, 1990, final compliance may be extended to May 31, 1995, and the schedule in paragraphs (a) through (d) of this subsection adjusted by the cabinet.

Section 7. Exemptions.
Any of the following types of external floating roof tanks storing liquid petroleum shall be exempt from Section 3(4) as follows:

(1) External floating roof tanks having capabilities less than 1,600,000 1 (422,000 gallon) used to store produced crude oil and condensate prior to custody transfer.

(2) A metallic-type shoe seal in a welded tank which has a secondary seal from the top of the shoe seal to the tank wall (a shoe-mounted secondary seal).

(3) External floating roof tanks storing waxy, heavy pour crudes.

(4) External floating roof tanks with a closure or other device which can be demonstrated to the satisfaction of the department to be equivalent to the seals required in Section 3(4)(a).

Effective Date: JUNE 24, 1992

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JUN 29, 1979	45 FR 6092
1st Revision	FEB 05, 1981	NOV 24, 1981	46 FR 57486
		MAR 30, 1983	48 FR 13168
2nd Revision	OCT 20, 1992	JUN 23, 1994	59 FR 32345